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ABSTRACT

American rural communities are decaying, the underlying causes being chronic unemployment and inadequate infrastructure. The information age can cause the ultimate demise of rural America by further eroding local institutions or it can be its savior by revitalizing the sense of community. The link between community development and the information age is discussed. Electronic access to government services and online learning, tele-entrepreneurship, and using one's computer to get a better job are part of the solution to rebuilding rural community. The Internet, the National Resource Education Network (NREN), and the National Information Infrastructure (NII), which directs and makes policy for NREN and the Internet, are briefly described. Policy goals of the NII are discussed, particularly that it provide universal service to avoid information haves and have-nots. A proposed project that will deliver economic development services to all of Kansas is described, as are two successful rural information networks. In K-12 education, the two main issues are training teachers to use the Internet and the incorporation of Internet information into the curriculum so that it is relevant and useful. (TD)

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ED 374 927

THE INFOBAHN: COMMUNITY AND ECONOMIC DEVELOPMENT

by: Harry Willems

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THE INFOBAHN: COMMUNITY AND ECONOMIC DEVELOPMENT

INTRODUCTION.

The cost of rural space is nearly too much for society to pay. Predictions for rural America are gloomy indeed. The information age has the potential for causing the final demise of rural America by further eroding hierarchical institutions or it can be the savior by means of revitalizing the sense of community. Several questions beg consideration to understand the link between community and the information age:

- $ What is community?
- $ What is information technology?
- $ Where is the rural community actually growing? Why?
- $ How can information technology make our area part of that group?
- $ Is the technology goal driven or policy driven?

As one can imagine, not everyone is thrilled at the intrusion of new technology. We are thrilled even less at the contemplation of further government intrusion into our living space. We may not even agree, at this point, that rural community is so unsatisfactory that it needs fixing. Some of us own our rural life, it has been passed down from the previous generation. We get along. How many of your children, the best and the brightest, stay at home or come back home to live? Can the overhead of equipment and land purchases be covered by the income produced? How many schools, hospitals and industries need to close to convince us that rural America is in trouble? And in Kansas, the struggle between the urban cities and rural areas for taxes and tax incentives continues to be a hot issue. Why should urban tax dollars pay for rural services? Remember it was the rural cooperatives of the thirties and forties that brought power to dark homes. The cooperatives of the forties, fifties and sixties brought agricultural marketing to Kansas. The seventies and eighties brought rural water cooperatives to much of Kansas. We need cooperative ventures to bring Rural Datafication to rural Kansas.

Rural Datafication is using the same scheme that electric utilities used sixty years ago to bring power to rural Kansas. In the early thirties, darkness fell at the edge of the city. Modern home conveniences were only gleams in the eyes of house wives and power tools and refrigerators were the out-of-reach stuff of Sears Roebuck catalogs. Nostalgically, we call them the "good old days". I think our grandfathers and mothers would disagree. As late as 1935, decades after electric power had become a part of urban life, the wood range, the sad iron, and the dim kerosene lamp were still the way of life for almost 90%

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of the 30 million people who lived in the countryside. "Every city 'white way' ends abruptly at the city limits. The lack of electricity, wrote William E. Lichtenberg, has divided the United States into two nations; the city dwellers and the country folks". (Caro, Robert. *The Years of Lyndon Johnson: path to power.* Vintage. c1981. P. 516.) In 1992 Michael Staman described to the NSF (National Science Foundation) parallels in the Rural Electrification Act of 1936 and similar efforts today to bring the power of the Internet to millions of Americans in difficult to reach and difficult to serve areas. The Rural Datafication project and the questions raised will be handled in later sections of this paper.

RURAL DECAY AND THE INFORMATION SOCIETY.

The future of the rural community is being molded in large part by a wave of technological, economic and political change. Perhaps these new forces will bring relief to remoteness or then again perhaps it will leave the rural community further behind. Urban areas are rarely altruistic with their technology or money. Until this point, the rural community has largely been passed over by technological change. It suffers the worst telecommunications country wide.

Jobs and income lead the list of rural deficits. One can visually observe the decay of rural towns. The best and brightest young people leave for the city. The Monday (June 7, 94) Wichita Eagle, section D, chronicles the loss of small farms in three central Kansas counties. These phenomena can be duplicated in nearly all parts of rural Kansas. This represents an 11 percent loss of small farms in five years. How long will it be before those without inheritance can no longer afford to live outside metropolitan areas? A broader concern for freedom, justice and community empowerment is needed in the search for sources of problems that restrict social well-being.

The task of rescuing rural America falls to economic development. The nature of the beast is that it works best when it is tied to effective community. We began with the question, what is community? It has three facets; 1. a locality where people meet in their daily lives. A geographical area. 2. More or less complete local society. 3. A venue for local residents to express mutual local-oriented interests for collective action. To remove barriers to community, one must first find answers to these questions: 1. Why are people prevented from meeting needs together? 2. Why is local society incomplete? 3. What prevents people from working on community issues? Easy answers abound. Distance, bad roads, apathetic people, or perhaps no profound rallying issues. The deeper underlying basis are rural poverty, chronic unemployment and relentless deterioration of services; schools, hospitals and buildings.

Frank Odasz from the "Big Sky" program in Montana concurs with these thoughts. He offers solutions that are "bottom up", or grass roots driven. "The competition of the Industrial Age is giving way to Information Age collaboration, the ability to partner with those whose expertise is beyond ones own area. Those who collaborate best, will be the most successful." (Odasz. Issues in the Development . . .) He continues "the ability to glean specific information from global sources and to work collaboratively to mold that information into entrepreneurial opportunities appears to be the skills required for success." (Odasz. "Issues in the Development . . .")

Community, in a slower era, was based on purpose. Today, even in some rural areas, we don't even know our neighbor. People move in and out with the seasons. There is a new phenomenon called "cacooning" or never leaving ones castle, that has negative effects on even rural community life. Staying in one place for 20, 30, or even 40 years is getting rare. In the book *If It Ain't Broke, Break It,* Robert J. Kriegel says that people under 25 will change professions four times in a lifetime and change jobs every four years. Information jobs become obsolete in as little as 18 months. Today's society is solving problems electronically. We're finding we have a new propose for establishing a support community. Electronic access to government services, and online distance learning, tele-entrepreneurship and using one's computer to get a better job is part of the solution to rebuilding rural community. Rural communities can be relationship rich in the midst of isolation. When the young people find out they can make a viable living with information services from rural settings, while keeping relationships, the deterioration of Kansas rural towns will stop. Sharon O'Mally in *American Demographics* magazine points to the resurgence of growth in rural areas. Fourty-three percent of new populations in rural areas results from urban flight. The bad news is that Kansas has "nothing much going on". (O'mally. P.26) Unless we can provide jobs, economic freedom, community or recreation and retirement, Kansas towns have little to offer the new wave of urban migrants.

THE INFORMATION FRONTIER: NREN, NII, INTERNET.

NREN (NATIONAL RESEARCH AND EDUCATIONAL NETWORK), and the Internet, and the NII (National Information Infrastructure) all refer to the same phenomena, but they all describe different aspects of the critter. The Internet has been described in many different ways, the most famous is attributed to our Vice President, Al Gore. He described it as the Information Superhighway. It has evolved to the point that it has been shortened to the "Infobahn". Any speed is ok, watch out for slow traffic. There are over 200 electronic discussion groups, including economic development, rural health issues and nearly

every conceivable topic. The Internet has three major components. Remote logins, or telneting, ftp or file transfer protocol and electronic mail or e-mail. These are connected to 20,000 networks, with over six million computers connected online. Mail can be sent to almost any location in the world faster than you can address an envelope. This service is available now, at your local library. The Internet evolved from military networks in the sixties, including educational institutions in the seventies and the National Science Foundation Network in the eighties to form a loosely decentralized network. The Bush administration initiated NREN to provide a more stable telecommunications infrastructure. The Clinton administration has, probably while kicking and screaming, championed the NII. The NII is the policy making apparatus that directs and makes policy for NREN or the Infobahn.

The electronic community has concerns that someone direct policy and consciously shape NREN to meet public needs. The NREN must be built with flexibility to accommodate new technology. It must allow for libraries to open databases to patron access. Congress must create an environment that stimulates information entrepreneurship. The National Public Network is emerging as a smokestack industry of the information age. It will increase participation in individual enterprise and politics. The NREN will become as important as the interstate highway system, telephone network and power grid.

Some novel uses of the Internet system, some already being used successfully and some not even thought of yet, will and have emerged. Invoicing, billing, listing, brokering, advertising, shopping and matchmaking take place on the Infobahn daily. For ubiquitous use to take place and usage to become ordinary, the infrastructure must be seamless and transparent. A phone call does not require the user to route the signal, switch and toggle and wonder if the connection will continue. All of the switching from one phone company to another is done seamlessly, without jumps, squeaks and howls. The process is transparent. So too must be the information infrastructure. Arcane commands now required to navigate the Infobahn will be exclusionary, most people will simply not bother to connect.

The policies of the NII must include a plan to protect free expression of ideas, tangential to the first amendment. Since the NII assumes construction of NREN to be done by private initiatives, telecommunications companies, cable companies and others, competition must be assured to keep prices in line with consumer ability to pay. NII initiatives will be explored further in the section on NII.

THE NATIONAL INFORMATION INFRASTRUCTURE (NII).

The NII is treated separately from NREN and the Internet because

of its importance and potential for positive policy making that directly effects rural America. The NII is the overarching policy making apparatus, and as infrastructure implies, consists of the wires, fibres, switches, text and images of the INTENRET and the NREN combined. The Internet is the elitist precursor of the more powerful and supposedly more widely used NREN. The NREN, launched during the Bush administration, provides more powerful support and network backbone cabling for the nation. It is compared to the interstate highway system, with major trunk lines to all parts of the country. The strength or weakness, depending on your point of view, of the NII is that it provides goals and directions derived from Congressional actions, national networking people, and telecommunications people acting in concert to make policy to drive the initiative of the "Infobahn" to the doorstep of every American. This ubiquitousness is the primary objective driving the NII. "Preserving and advancing universal service to avoid **information haves and information have-nots**". Other important goals are:

* Encouraging private investment in the NII
* Promoting and protecting competition
* Providing open access to information
* Ensuring flexibility so as the regulating framework does not stifle nor interfere with rapid technological and market change in the technology and telecommunications industry

No competent person denies the need for a national perspective with regards to the flow of information. Some voices doubt that the government can perform the task with the best results. There is consensus developing that reducing government regulation will increase competition, provide more services and options for consumers and eventually reduce costs. Allowing for the market to dictate pricing may be better than government regulation. The Internet has never been free. Some of us freeload on educational institutions that have built the networks. The private sector must be heavily involved in building the network. Over the next four years the government will spend eight billion dollars on infrastructure related programs while the private sector will spend over ninety billion dollars. Because of this dominant role of the private sector, being market-driven, schools and libraries could find themselves priced out of the market. Access fees may be prohibitive. The NII seeks to provide for affordable access by schools, libraries and health-care providers.

In *Mega-projects II: Access to the Internet*, standards are examined. Policies of the NII set technical standards that allow for seamless and transparent access to information. Switching from network computer to other networks and other computers means that everyone must use similar protocols. TCP/IP (Transmission Control Protocol/Internet protocol) is an example of standards that the NII must control. This allows for the transfer of

information between different platforms. In other words, the NII will make policy that allows for information retrieval and access a friendly interface with end users.

Voices of discontent with the NII, and the major document of the NII, "*The NII: Agenda for Action.*" have ensued. Jack Rickard says "they did manage to assemble every cliche in the free world regarding online communications and actually pile them all into one document". Rickard notes that the government has a place in the future network, but its penchant for promising something and doing another is well documented. His main concern is the encryption proposal. Security on the Infobahn may be better left to individual initiative. The government encourages anyone to encrypt messages and communications to protect their privacy, with decryption given to the end user and the government. The government wants to hold all the keys. "I would fear this same socialist greed for control of our lives (health-care) will be applied to the online community via the NII". Privacy issues in government hands is the fox guarding the hen-house. In the online world, power moves down towards the grass-roots, not up towards a central authority. One of the main criticisms of the Internet is that without central authority, organization of information is nearly impossible. However, Rickard concludes that "Electronics is a good material for building freedom, and a most notably poor one for forging chains. It takes only one person with an attitude, a computer, and a few free afternoons, all the plans and all the plots of all the kings go away with a single program release." (Richard. Boardwatch Magazine. P. 3.)

TRENDS AND ISSUES.

Major trends are becoming visible in the headlong rush towards becoming an information society. Some of the trends and issue are peculiar to Kansas, although one suspects they will have wider repercussions and become issues in other areas as time passes. Some of the trends are positive and others are disturbing. Some trends lead to a brighter future for rural America.

One of the most disturbing trends is perhaps the creation of a dichotomized society of information haves and have-nots. As the Internet "morphed", metamorphosed from a military network to a science and education network it took on elitist qualities that, by definition, left out the non scientific and academic population. As the NII struggles with policies that should make the Information Superhighway (Infobahn) ubiquitous one finds that it is confronting many negative perceptions.

* fear of the global village concept
* apathy - I don't need information, why should I learn

where to find information.

* fear of technology - I don't even know how to turn a computer on!

Robert Boucher lists other issues. How will access to networking (globally) change K-12 library services and the role of staff? Mitch Kapor brings up the concept of "common carriage" as an issue. Common carriage needs to be protected as a tangent to free speech rights.

The chance to influence and shape the new medium is now, before it is frozen in policy and form. The biggest obstacle is obscurity. People don't get into what they don't understand. They don't realize the importance to human and political relationships. These issues are paramount to the future of this rural community and society as a whole.

Other trends are identified by Berny Vavrek specifically for libraries. The library is not at the top of the food chain when people are looking for information, libraries finish 15 out of 17. Personal computers and technology can go along way towards fixing the problem. One of the major issues in Kansas is training. There seems to be pockets of trainers in urban areas, but rural areas do not have banks of modems and computers with quality trainers available. The process has come down to a one-on-one system. Library systems have taken on the responsibility to train librarians, adequate training of the faculty and students is going slowly. The average citizen without access to computer and modem is entirely left out. Once on-line, there are Internet courses taught by Odasz's "Big Sky Telegraph" and a host of other training sessions directly from the Internet. The issue in Kansas is getting far more attention than in most neighboring states.

One of the more subtle trends that has the earmarks of a serious issue in the not-to-distant future is that of connectivity. Kansas is far ahead of many states in providing dial-up access the Internet. INK (Information Network of Kansas) has had much to do with the success of bringing access to rural Kansas. Serious limitations to access remain relative. Frank Odasz would be delighted at the 800 number dial-up access for every school and hamlet that has access to a modem, at a very low price. The issue for Kansas is what everyone with only dial-up access will find sooner or later - it supports only text and binary file transfer. Before the arrival of Mosaic and Cello and other multimedia browsers, text was fine. Access was the issue. Training teachers to use the power and empowerment of the Internet is difficult, but possible. Making the Internet relevant to students my be much harder in black and white-still documents. Existing technology supports multimedia, real-time pictures, hypertext documents at every POP (Point of Presence). Dial-up access does not. Serial Line Internet Protocol (SLIP) is an affordable alternative that will support multimedia

interfaces. INK has published its readiness and willingness to support SLIP connections. The software is shareware pulled off the Internet. Connectivity is impaired by the state modem pool of obsolete modems. The issue is training and motivation of the end users of information. How long would black and white televisions hold the interest of students or businessmen in a tele-conference situation? Not long. The value of information is its ability to be customized to special applications. Downloading by ftp or e-mail text files will not challenge students to use technology for life long learning. Further educational issues will be covered in another section. Dial-up access is an excellent training tool and training ground for internauts, but it may perhaps, slow the progress towards full SLIP or T1 connections. Legislators are fond of noting that some access is better than no access. The state modem pool is run by DISC (Division of Information Systems and Communications) and may not have a clear understanding of the need nor appreciate the importance of modern communication technology, with full multimedia capability, in school curricula.

ECONOMIC DEVELOPMENT INITIATIVES.

The Internet is spawning technology economic development projects by the hundreds. The government is replacing LSCA (Library Service and Construction Act) with a more technological oriented program. The emphasis is shifting from buildings to communications technology. Cyberspace (the nether world of the Internet) is almost clogged with the acronyms of technology projects. We will look at a couple of successful projects, one of which is a proposed project for Kansas. Through the fedworld.gov gopher (gopher is a menuing system that organizes information) one can access government economic development initiatives and grant proposals. ALF (Agricultural Library Forum) provides through the RIC and RICHS subboards, communications directly with the people that are working or have worked with rural development and health issues. The government, from which grant money flows, provides excellent communications when one knows where to look. This is an excellent example of information provided by any local library with connection to INK. Again the training issue rears its ugly head. At this point, connecting with ALF is difficult. This project can be done with practice and patience. Training is mandatory to understand basic connectivity processes.

Kansas is again on the cutting edge of technology with the proposed project of KICIN (Kansas Integrated Commercialization Information Network). Several state communications entities have united to propose a service that will deliver economic development service to all of Kansas. It is sponsored by KTEC (Kansas Technology Enterprise Corporation). KTEC is a state/private entity chartered by the Kansas legislature to

promote technological based economic development. Another partner is CECASE (Center for Excellence in Computer Aided Engineering). The University of Kansas is where CECASE is located, and is headed by Dr. J. Holtzman. INK, SLIM (School of Library and Information Management) of Emporia State and the Kansas State Library are the other partners. KICIN is proposed in a grant to TIIAP (Telecommunications Information Infrastructure Assistance Program). The total grant applied for is $950,000, although it is negotiable downward at the time of granting. TIIAP is ancillary to the NII. TIIAP has 26 million dollars in grant money to give. There are other Kansas initiatives applying for the grant money and one twenty-sixth of the total is very optimistic. TIIAP money is scheduled to increase to one-hundred million for the following year. KICIN is the best kept secret in the electronic world. The grant award is due in September of 1994 with 7000 applicants for the twenty-six million dollars. The good news is that the matching funds are already committed and are available even if the federal money does not materialize. Most, if not all, of the principles are not aware of that yet.

The KICIN narrative lists seven issues that are identified as targets of improvement:

1. Create an interactive, user-friendly, one-stop shopping and information exchange.
2. Provide training and education to librarians, Community College business program directors.
3. Provide access to other Internet economic development information.
4. Monitor the system for use and respond to queries for help. The interactive nature of KICIN will allow for evaluation.
5. Provide direct access to computer literate business-persons through KICIN or INK.
6. Provide hardware and software to libraries.
7. Monitor future trends in technology for planning upgrades and possible expansion.

It seems to be a well thought out plan and follows the grant guidelines very closely. The CECASE staff of Dr. Holtzman, Tim Johnson and Cathy Ambler are to be commended. It will propel Kansas to the front of electronic development, and begin to provide rural Kansas with adequate tools to rebuild community by using technology to provide jobs with adequate salaries to attract and hold new people.

One can get a feel for the information to be provided by KICIN by using the INK gopher to go to CECASE (see information sheet). Information about economic development on is now currently available on a smaller scale.

SUCCESSFUL ON-GOING RURAL INFORMATION NETWORKS.

There are bushels of acronyms that represent successful ongoing projects. This paper chooses only to identify two. Big Sky Telegraph is the brain child of Frank Odasz. BST began its role as a rural tele-computing testbed in 1988 at Western Montana College, supported by US West, by offering an online course via modem to rural K-12 teachers, many of which were teaching in one and two room rural schools. BST customized its function and services based on advice from practicing teachers. During the last six years, BST has offered free access and online lessons to all citizens interested in learning the benefits of tele-computing.

Networking, by its vary nature, leads away from rigid stratified structures and towards informal lateral socially supportive learning partnerships. Once convinced that all of us can learn, the incredible power of networked, knowledgeable and caring people taking purposeful collaborative action may begin to affect worldwide change, transcending governments, cultures and religions. How can membership in a Global Village be fairly implemented? Those who initially receive gigabandwidth services may enjoy disproportionate advantages to all those perhaps in rural settings, who do not. We need to move forward together.

The model of viable ubiquitous scaleable national network challenges many prevailing assumptions perpetuated by the grand visions of large corporations. Local electronic bulletin boards systems offer a minimal cost network server model to provide store and forward Internet e-mail services, local free access to customized menu containing self-directed training and highest value information specific to local community, gleaned from the Internet.

There are many fantastic features of BST. One of the most cost effective is the "point disc" system of using e-mail. A disk is provided free with the Point Disc program installed on it. It can be taken to the public library that connects to the Internet and e-mail is downloaded onto the disk. One immediately goes offline and reads the disk at his or her convenience on a home computer. Return mail is put on the disk and the process is repeated. Very minimal telecommunications charges are incurred.

Rural Datafication has been used generically several times because it has a catchy ring, and embodies the sense of urgency demanded by decaying rural America. Rural Datafication is, in fact, a project along the Great Lakes, and includes IL, IN, MI, MN, NY, PA, WI and IA. The network connects over 300 institutions. The purpose of the project is to extend Internet access and service to undeserved constituencies in rural areas. It has three key components: 1. selecting and providing standard hardware and software for dial-up and dedicated connections. 2.

Training and associated materials. 3. Expanding network connections and service to difficult to reach and difficult to serve communities. It has received more than $1,300,000 in NSF grants over two years to continue and expand the project.

Over the next two years Rural Datafication will produce the following services:

* client and server software with documentation
* training materials for new users
* new user start-up kit and site guide
* troubleshooting guide for state networks
* one UNIX server per state to support a variety of information services
* evaluation reports from the project partners, including reports from users
* a model for extending infrastructure in other regions
* a model for extending support structures in other regions

This successful program bears watching and should be a good source of learning material. The Internet is an excellent tool for keeping up with the progress of all the networking projects.

K-12 ISSUES AND TRENDS.

There are two main issues, in K-12 education, that this paper will examine very briefly. Training to use the Internet and incorporation of the Internet information into the curriculum. Training to use the Internet should and will include rote exercises. Rote exercises should not be built into the curriculum except as training devices. Teaching the ability to access and use e-mail, telneting and ftp will require the use of training devices and techniques that use "find the answer" problems. However, contrived use of the Internet will be the most devastating devices conceived to lessen the teacher's workload. Rarely does technology of this richness lessen the load. The only more potentially devastating issue is "plain ASCII text".

"Most students and teachers find tele-computing activities very exciting at first. In fact, some may not really care what they do as long as they are just "on-line". This type of phenomenon is common with almost any new experience. After a while, this novelty wears off and students want more from the experience. Students just like adults, need to see relevancy in what they are doing. If the tele-computing trip serves no useful purpose, or the journey is so arduous and the rewards seemingly so paltry, why even go in the first place?" (Ross. *Relevant Learning Experiences Using Telecomputing*. P.1) The Ross article will provide adequate examples of how to use the Internet integrated into the curriculum. Sellers provides answers to frequently

asked questions (faq's) and provides an excellent glossary of terms. They include:

1. Using the Internet in Educational Settings.
2. School support for an Internet connection
3. Implementation and technical options
4. Question of access: teachers or students
5. Educational collaboration, projects and resources

(Sellers. *FYI on Questions and Answers to Commonly Asked "Primary and Secondary School Internet User" Questions)*

CONCLUSION.

In the introduction we asked four questions. Satisfactory answers to these will give us tools for becoming part of the information age. What is community? More than just a location, it is a place where needs are met. When community is in decline, or when people cannot afford to be in a community they move on and community declines for lack of depth and tax base. Information technology is basically information provided by networks. The most powerful and empowering network for economic development, education and health care is the Internet. Connecting to the Internet, training, telecommunications, policies of the NII are the issues that need resolution for networking to be powerful in rural areas. Rural communities are actually growing in places that provide jobs and a stable income to residents. Information is now providing hundreds of thousands of jobs in rural areas. We need to find out how to begin attracting information jobs, and expanding existing jobs through Internet services. With interested people the Infobahn can come into each home and be an appliance just like the toaster. Interested people need to get involved directing goals of the NII and developing policy that make connection to the Infobahn as complete as possible. We do not need polarization in another area of our society. Universal coverage of the Infobahn will eliminate and mitigate the polarizing effect of geography on economic development.

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